

### In the Claims

Claims 1-10 (Canceled)

11. (Currently Amended) An isolated and purified tandem of P domains in a weak inward rectifying potassium channel (TWIK-1) protein constituting a potassium channel, wherein the protein ~~consists essentially of~~ comprises SEQ ID No. 2.

12.-26. (Canceled)

28. (Currently Amended) An isolated and purified tandem of P domains in a weak inward rectifying potassium channel (TWIK-1) protein comprising a functionally equivalent derivative of SEQ ID NO. 2, which is suitable for transporting potassium across a membrane with weak inward rectification properties, and wherein said functionally equivalent derivative comprises two pore domains P1 and P2[;] and four transmembrane domains M1, M2, M3 and M4 in the order M1-P1-M2-M3-P2-M4 from the N-terminus to the C-terminus; an amino acid loop between the M1 and the P1 domains containing a potential N-glycosylation site; a phosphorylation consensus site at the N-terminus; a phosphorylation consensus site at the C-terminus; and a phosphorylation consensus site between the M2 and M3 domains.